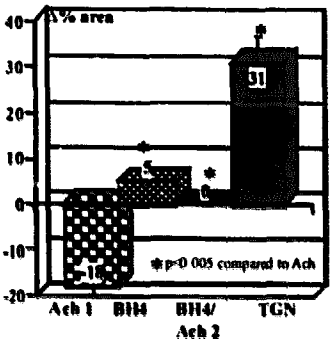

NO-synthase may represent a new therapeutic concept for the treatment of endothelial dysfunction.

9:45

832-6 Coronary Vascular Effects of Physical Exercise and Dobutamine: Comparison of Physiologic and Pharmacologic Stressors

A. Prasad, G. Zalos, W.H. Schenke, E. Amegashie, A.N. Kitsiou, A.A. Quyyumi. *NHLBI, Bethesda, MD, USA*

Although dobutamine (D) is routinely used as a surrogate for exercise, there is often discordance between exercise and D stress tests, especially in pts with mild coronary artery disease (CAD). While physical exercise causes myocardial ischemia by a combination of increase in demand and epicardial coronary (EC) constriction, it is not known whether constriction plays a role in D-induced ischemia. We hypothesized that the disparity is due partly to the lack of EC constriction during D stress. EC diameter were measured in response to exercise and D in 10 pts with CAD. D was given intracoronary (ic) (10 to 80 μg/min) and intravenously (iv) (5 to 40 μg/Kg/min) until either the peak dose, or myocardial ischemia, or the rate-pressure product achieved during exercise was reached. Finally, 100 μg ic nitroglycerin (NTG) was given. The rate-pressure product during exercise and D was similar (P = NS). Exercise produced no overall change in EC diameter, whereas at the peak doses of D, there was significant vasodilation compared to baseline (5 ± 1% and 7 ± 1%, ic and iv, both P < 0.02). Even segments that constricted with exercise (-5 ± 2%) dilated with ic and iv D (7 ± 2% and 9 ± 2%, P < 0.01 respectively). NTG dilated all EC segments (11 ± 2%, P < 0.01). The data suggests that with equivalent myocardial stress, D causes dilation, whereas exercise can often result in constriction of EC segments in CAD, indicating fundamental pathophysiologic differences between mechanisms underlying myocardial ischemia produced by physiologic and pharmacologic stressors. Thus, D stress may not be adequate for diagnosing mild CAD, and for evaluating the effects of treatment on ischemia.

833 Mortality Predictors in Percutaneous Interventions

Tuesday, March 31, 1998, 8:30 a.m.–10:00 a.m.
Georgia World Congress Center, Lecture Hall 1

8:30

833-1 An Analysis of Percutaneous Transluminal Coronary Angioplasty Performed in California in 1995

D.L. Brown. *University of California, San Diego Medical Center, San Diego CA, USA*

Background: The use of percutaneous transluminal coronary angioplasty (PTCA) continues to expand. Approximately one-third of all PTCA procedures in the United States are performed in California. This study describes the 1995 California in-hospital experience with PTCA using a statewide administrative data base.

Methods: Discharge abstracts for all patients undergoing PTCA at non-Federal hospitals in California in 1995 were analyzed.

Results: 154,193 PTCAs were performed. Mean age was 64.7 years and 66.2% were male. Acute myocardial infarction (MI) was the admitting diagnosis in 32.6% of patients. Twenty-two percent of patients were diabetics, 10.7% had prior MI, 12.5% had congestive heart failure (CHF), 13.6% had prior PTCA and 9.8% had previous CABG. PTCA was of a single vessel without intracoronary thrombolysis in 82.8% of patients, of a single vessel with intracoronary thombolysis in 4.0% and was of multiple vessels in 11.7%. The average length of stay was 5.3 days and the average charge was $41,320. Overall mortality was 3.4% with significant increases in mortality for females (4.6% vs 2.8% in males, p < 0.01), patients >62 years of age (4.6% vs 1.5% in patients <62, p < 0.01), patients with acute MI as the admitting diagnosis (6.75% vs 1.8% in patients without acute MI, p < 0.01) and patients with CHF (11.7% vs 2.2% in patients without CHF, p < 0.01). In 1995 <200 PTCAs were performed in 29 of the 146 (19.8%) institutions performing PTCA. The mortality of PTCA in institutions performing <200 cases in 1995 was 13.9% compared to 3.3% in institutions performing ≥200 cases (p < 0.01) that year.

Conclusion: PTCA in California is associated with increased mortality in women, the elderly, patients admitted with acute MI, and patients whose procedures are performed at institutions performing less than 200 PTCAs annually.

8:45

833-2 Predicting Mortality Following PTCA: Results From NCN

E.D. Peterson, D. Moore, L.H. Muhlbaier, E.R. DeLong, R. Grosswald. *Duke Univ., Durham, NC, USA*

Background: Few clinical models exist that can accurately predict mortality following percutaneous coronary intervention (PTCA).

Methods: We developed a PTCA mortality risk prediction model from the National Cardiovascular Network Database (n = 58,714 procedures performed at 19 U.S. centers between 1/94 and 1/97) which used only objective clinical variables.

Results: Overall in-hospital mortality rate was 1.2%. The mean age was 62.7 yrs, 32% were female, 24% had diabetes. The significant multivariable predictors of in-hospital mortality are displayed below:

Risk Factor	Chi Sq	OR	95% CI
Pre-procedure Cardiogenic Shock	337	12.5	8.1–16.5
LVEF (per 10% decline)	194	1.5	1.4–1.6
Patient Age (per 10 yrs older)	134	1.6	1.5–1.7
Primary Angioplasty for Acute MI	75	2.7	2.3–2.9
BSA (0.1 decline in meter^2)	53	1.2	1.1–1.2
Renal Disease	26	2.3	1.8–2.8
Prior Coronary Intervention	23	0.6	0.4–0.8
Diabetes Mellitus	11	1.3	1.1–1.4
Multivessel Coronary Disease	9	1.3	1.2–1.5
Pre-PTCA IABP	6	1.6	1.1–2.0
Proximal LAD Disease	6	1.3	1.1–1.5
Admission MI (w/o Primary PTCA)	5	1.3	1.1–1.6

The model's overall discrimination ability was excellent C-index = 0.813. We internally validated the model using a bootstrap method (adjusted C-index = 0.815). The model was also well calibrated for predicting outcomes in low-moderate- and high-risk patient groups.

Conclusion: This model represents an accurate, objective PTCA mortality risk prediction model which is useful for estimating patient outcomes and for providing physicians with risk-adjusted mortality results.

9:00

833-3 Proteinuria in Diabetics is a Powerful Predictor of Death Following Percutaneous Coronary Revascularization

S.P. Marso, S.G. Ellis, R.E. Raymond, I. Franco, P.L. Whitlow, E.M. Tuzcu, E.J. Topol. *Cleveland Clinic Foundation, Cleveland, Ohio, USA*

Background: Diabetics have a higher mortality after percutaneous transcoronary revascularization (PTCR) than non-diabetics, but the etiology for this is poorly understood. We hypothesized that diabetics with proteinuria would have higher mortality than diabetics without proteinuria following PTCR, owing to an association of proteinuria and advanced atherosclerosis.

Methods: A total of 537 consecutive diabetics with urinalysis (UA) underwent PTCR between 1/93 and 12/95 were divided into proteinuria (prot), (n = 217) and non-proteinuria (non-prot) (n = 320) groups. The prot group was further prospectively divided into low concentration (trace, 1+, 2+) and